AMATEURADIO

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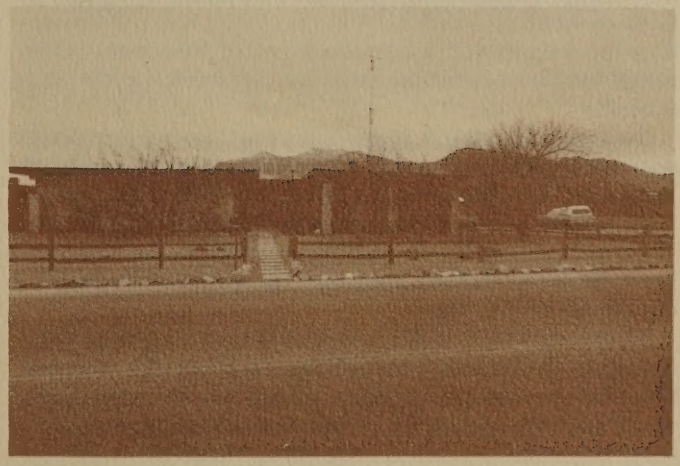
Radio Ham Wins 'Home of the Month' Award

Mr. and Mrs. Dale Green, of Sierra Vista, Arizona, have been selected by the Sierra Vista Beautification Commission as the recipient of the "South Home of the Month" award for January 1984. The Greens' home was selected by the Commission as an example of outstanding attention and care to their property.

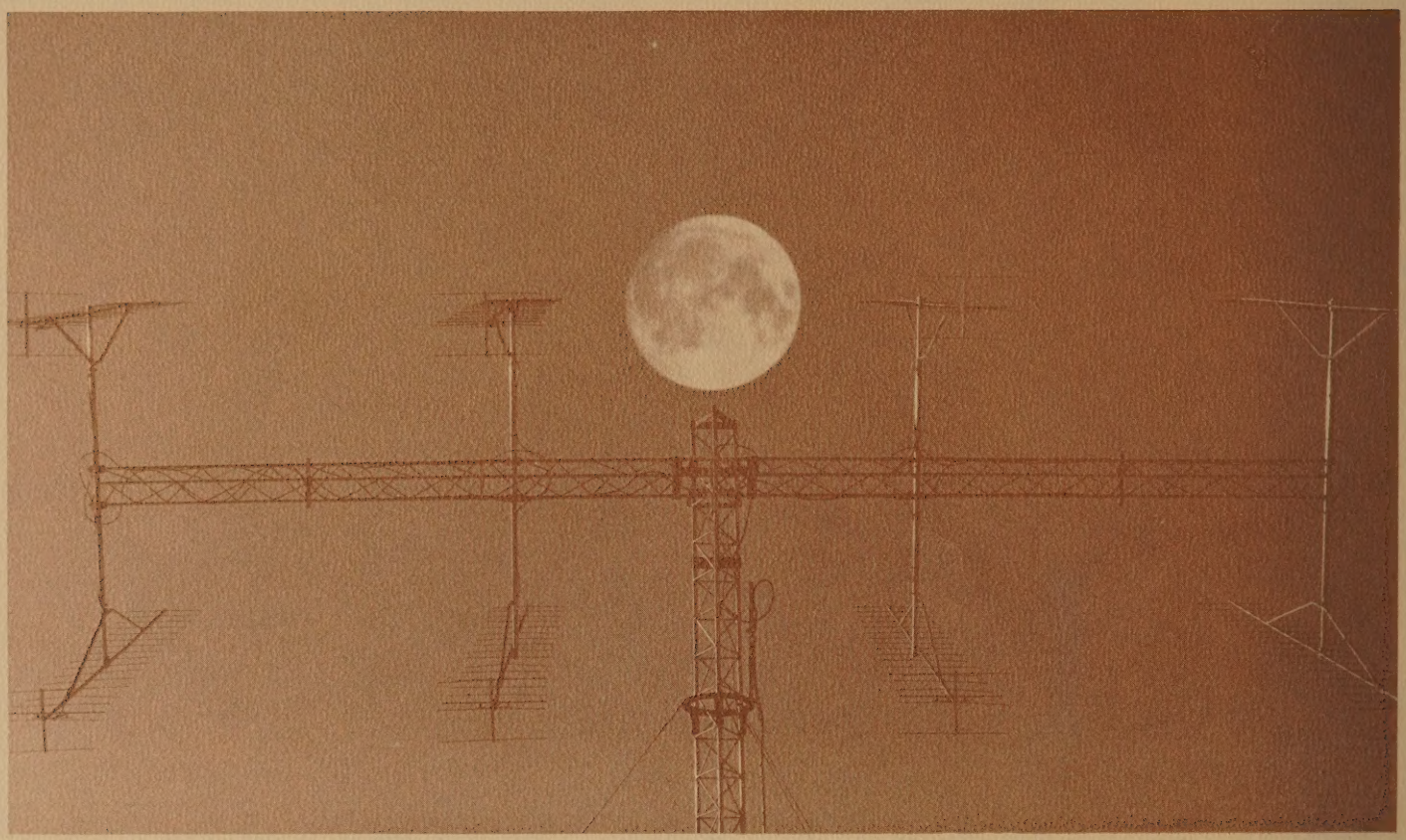
Green, a retired manager for AT&T, has been an Amateur Radio operator for 29 years, the last nine of which he and his wife have been at their present Sierra Vista location. An officer for the Radio Amateur Civil Emergency Service (RACES), Green has won several public service awards for his ability to communicate during emergencies. He has the capability to establish two-way communications with the entire world. (Green has talked with fellow amateurs in 313 countries, and contacted hams in all 50 states.)

Green says that his directional antenna atop a 61-foot tower enhances his ability to provide community service using Amateur Radio.



The award-winning Green residence in Sierra Vista, Arizona. Dale Green's 61-foot radio tower enhances his ability to lend communications assistance to his community.

Traveling Via the Moon



Pointing "Moonward," this complex amateur antenna system is used to contact other stations via the Earth-Moon-Earth path.

Amateur Radio operators are exploring a new frontier — outer space. Ed Grey and Barry Arneson, of South Dakota, are two hams that communicate with others via the Moon. These two amateurs use "moonbounce" or Earth-Moon-Earth (EME) communications. Briefly, the concept of EME is this: stations that can simultaneously see the Moon can communicate by reflecting radio signals off the lunar surface. Arneson and a few others are searching for the elusive "Worked All States" (WAS) award, with a special endorsement for making contact with all 50 states using 220-MHz. Grey earned his award in February. (MHz is the abbreviation for megaHertz, a measurement of frequency. One megaHertz is one million Hertz, or one million cycles per second.)

Because 220-MHz is in the very high frequency (VHF) spectrum, signals normally travel "line of sight" and are hampered by obstructions such as trees and mountains. Even certain weather conditions affect these frequencies. Thus, it is not routinely possible to contact others at very great distances. Hams circumvent this restriction by bouncing signals off the Moon.

When using EME, radio signals must be strong enough to overcome the losses incurred by traveling the distance between the Earth and Moon, about 250,000 miles each way. The Earth and Moon must be in proper alignment to reach a particular point on the Earth. Amateurs must run the full legal limit of transmitting power (1500 watts PEP output), along with large antenna systems, in order to achieve the strength necessary to establish the Earth-Moon-Earth connection. Commercial equipment in this power range is difficult for the average amateur to obtain. Grey and Arneson used a combination of home-made and commercial equipment. Hams who operate EME have some of the most sophisticated, state-of-the-art stations in existence, all at *no* expense to the taxpayer.

After a week of operating, Grey and Arneson made 75 contacts via the moon, and put West Virginia, Virginia, Maryland, Delaware, New York, Vermont, Rhode Island and Connecticut on the Moonbouncer's maps.

Of course, moonbounce is not the only mode of communication on this band. These frequencies are still very useful for short range communication using mobile and portable equipment. Small hand-held radios ("walkie talkies") are extremely useful in emergency and rescue operations. Their portability and independence from commercial power mains make them ideal for this purpose. With a device called a repeater, the communications distance can be increased. (A repeater is an automatic retransmitting device, usually located on high mountains or atop tall radio towers, that increases the communications distance of portable and hand-held radio equipment.) Presently, there are 941 220-MHz repeater systems in the U.S. This represents an increase of 40% since 1983. Amateur Radio use of the 220-MHz band is growing at a phenomenal rate!

Amateur Radio Moonbounce operator Ed Gray operating the mobile station somewhere along the West Virginia/Virginia border. After several hours of operating, Gray and his partner Barry Arneson moved on to operate from the Maryland/Delaware border, where many more Earth-Moon-Earth contacts were made.

Ed Gray operating Norm Patenaude's Earth-Moon-Earth station located in Tiverton, Rhode Island. Many amateurs were contacted via moonbounce, including stations located in New Mexico, Indiana and Ontario, Canada.

Barry Arneson operating the ARRL Headquarters EME station in Newington, Connecticut. Nine stations were contacted via moonbounce from this station.

Packing it all up in Newington, with eight inches of snow on the ground. The generator is attached to the trailer on the left, and the antenna system is above the car roof.

WANT TO KNOW MORE ABOUT THE AMATEUR RADIO SERVICE? Contact Perry Williams, ARRL's Washington Area Coordinator, and arrange for a personal visit by calling (202) 296-9107.

ALONG LEAGUE LINES

Experimentation on the Amateur Radio frequency bands by hams has been the norm ever since its inception at the beginning of this century. There were no radio regulations in the very early days of radio — and it wasn't until 1912 that any sort of radio regulation was passed. The Alexander Bill allocated amateurs those frequencies 200 meters and lower. It was thought that these frequencies were useless for any kind of long range communication. Innovative amateurs soon proved that it was possible to establish contact with fellow amateurs on the other side of the globe using these "useless" frequencies.

Back in radio's golden years, simply communicating was enough challenge. As the years progressed, however, more sophisticated techniques developed. Amateurs kept up with, and indeed, were some of the pioneers of new technology. Radio hams developed reliable communications equipment, and needed to face new challenges.

Naturally, the "newest frontier," outer space, opened up a new area to explore. More than twenty-five years ago, Amateur Radio operators were among the few with the capability to listen to the first man-made satellite, Sputnik 1. Four years later, radio amateurs successfully designed and built their own satellite, OSCAR 1 (Orbiting Satellite Carrying Amateur Radio), made with spare and donated parts. OSCAR 1 was launched in December 1961, from Vandenberg Air Force Base, California.

The first live, manned Amateur Radio operation from space took place in December 1983. Astronaut and ham radio operator, Owen K. Garriott, made over 300 two-way ham radio contacts in his spare time, while on board the Space Shuttle *Columbia*. Thousands more all over the world heard his transmissions.

The use of higher and higher frequencies is also on the rise. Amateurs are more and more utilizing very high frequencies (VHF) bands on 220-MHz and higher. Although the availability of commercial equipment on these bands is only slowly on the rise, equipment inavailability has never been much of a problem for the enterprising amateurs. Where there is no equipment, amateurs who really want to "start something" will build their own!

Given the fact that radio amateurs have long since established their worthiness and concern for a "clean" service, and that Amateur Radio has prided itself with its "self-policing" policy, Amateurs deserve to have the freedom to explore new frontiers of frequency allocations, modes of operations, and places to operate from. Exploring new frontiers has always been a part of the enchantment of Amateur Radio. Given the chance, the Amateur Radio Service will continue to demonstrate its pioneering spirit for centuries to come.

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